Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-223. (Canceled)

224. (Previously Added) A method of at least one of maintaining and restoring the viability of at least one organ subjected to a period of ischemia or hypoxia, comprising:

perfusing said at least one organ with a first medical fluid at a first temperature to at least one of maintain and restore pre-ischemia or pre-hypoxia energy levels in the organ; and

perfusing the organ with a second medical fluid containing substantially no oxygen at a second temperature to at least one of store and transport the organ, wherein said second temperature is lower than said first temperature.

225. (Currently Amended) The method of claim 224, wherein the first temperature is up to about ~~25~~24°C.

226. (Previously Added) The method of claim 224, wherein the first temperature is from about 12°C to about 24°C.

227. (Previously Added) The method of claim 224, wherein the first temperature is at least about 15°C.

228. (Previously Added) The method of claim 224, wherein the first temperature is about room temperature.

229. (Previously Added) The method of claim 224, wherein the first temperature is from about 20°C to about 25°C.

230. (Previously Added) The method of claim 224, wherein the first temperature is from about 20°C to about 38°C.

231. (Previously Added) The method of claim 224, wherein the first temperature is from about 20°C to about 35°C.

232. (Previously Added) The method of claim 224, wherein the second temperature is from about 1°C to about 15°C.

233. (Previously Added) The method of claim 224, wherein the second temperature is from about 4°C to about 10°C.

234. (Previously Added) The method of claim 224, wherein the first temperature is from about 12°C to about 24°C and the second temperature is at most 15°C.

235. (Previously Added) The method of claim 224, wherein the first temperature is at least about 20°C and the second temperature is at most 15°C.

236. (Previously Added) The method of claim 234, wherein the second temperature is from about 4°C to about 10°C.

237. (Previously Added) The method of claim 235, wherein the second temperature is from about 4°C to about 10°C.

238. (Previously Added) The method of claim 224, wherein the first medical fluid is an oxygenated solution.

239. (Previously Added) The method of claim 238, wherein the first medical fluid is an oxygenated hemoglobin-based solution and the second fluid is a simple crystalloid solution augmented with antioxidants.

240. (Previously Added) The method of claim 224, wherein the first medical fluid comprises at least one member selected from the group consisting of an oxygen carrier, a free radical scavenger, a pituitary growth factor extract and cell culture media.

241. (Previously Added) The method of claim 240, wherein the first medical fluid comprises at least one viability marker.

242. (Previously Added) The method of claim 224, further comprising monitoring the viability of the organ during at least one of perfusion of the organ with the first medical fluid at the first temperature and during perfusion of the organ with the second medical fluid at the second temperature.

243. (Previously Added) The method of claim 242, wherein viability of the organ is monitored by a sensor that senses fluid characteristics indicative of organ viability and at least one of displays sensed data and relays sensed data to a microprocessor for assessment.

244. (Previously Added) The method of claim 224, wherein the organ is perfused at the first temperature at least one of intermittently and continuously at a pressure within a range of approximately 40 to 100 mmHg.

245. (Previously Added) The method of claim 224, wherein the organ is perfused at the second temperature at least one of intermittently and continuously at a pressure within a range of approximately 5 to 40 mmHg.

246. (Previously Added) The method of claim 224, wherein the organ is perfused utilizing a pressure source incapable of providing pressures greater than 100 mmHg.

247. (Previously Added) The method of claim 224, wherein the organ is perfused utilizing a pressure source incapable of providing pressures greater than 40 mmHg.

248. (Previously Added) The method of claim 224, further comprising collecting medical fluid that has passed through the organ in a separate organ bath for each organ, removing medical fluid from each organ bath, filtering the medical fluid and returning the medical fluid to each organ bath.

249. (Previously Added) The method of claim 224, further comprising collecting medical fluid that has passed through the organ in a separate organ bath for each organ, removing medical fluid from each organ bath and sensing characteristics of the collected

medical fluid indicative of organ viability to allow a determination of whether the viability of the organ has been at least one of sustained and restored.

250. (Previously Added) The method of claim 224, further comprising collecting medical fluid that has passed through the organ in a separate organ bath for each organ, removing medical fluid from each organ bath and filtering, degassing and oxygenating the medical fluid and then either returning the medical fluid to each organ bath or to a medical fluid reservoir based on a sensed pH level of the medical fluid.

251. (Previously Added) The method of claim 224, further comprising prior to perfusing the at least one organ with the first medical fluid at the first temperature, maintaining the organ at a hypothermic temperature.

252. (Previously Added) The method of claim 224, further comprising prior to perfusing the at least one organ with the first medical fluid at the first temperature, at least one of perfusing and flushing the at least one organ with a medical fluid at a hypothermic temperature to reduce or stop catabolic changes.

253. (Previously Added) The method of claim 252, wherein said medical fluid at a hypothermic temperature comprises at least one member selected from the group consisting of antioxidants, anti-apoptic agents and agents that decrease vascular permeability.

254. (Previously Added) The method of claim 252, wherein said medical fluid comprises at least one marker for viability measurement.

255. (Previously Added) The method of claim 224, further comprising transplanting the organ into a mammal while the organ remains at the second temperature.

256. (Previously Added) The method of claim 255, further comprising again perfusing the organ with the first medical fluid at the first temperature after the organ has been transplanted into a mammal.

257. (Previously Added) The method of claim 255, further comprising again perfusing the organ with the first medical fluid at the first temperature prior to transplanting the organ into a mammal.

258. (Previously Added) The method of claim 257, further comprising again perfusing the organ with the second fluid at the second temperature prior to transplanting the organ into a mammal.

259. (Previously Added) The method of claim 224, further comprising at least one of storing and transporting the organ in an organ cassette after perfusion of the organ with the second medical fluid at the second temperature, the organ cassette including a portable housing and an organ supporting surface configured to support an organ while allowing effluent medical fluid to pass therethrough, the portable housing including openings configured to allow tubing to pass therethrough and to be connected to the organ.

260. (Previously Added) The method of claim 224, further comprising at least one of storing and transporting the organ in an organ cassette after perfusion of the organ with the first medical fluid at the first temperature, the organ cassette including a portable housing; an organ supporting surface; and tubing connectable to the organ to allow perfusion of the organ.

261. (Previously Added) The method of claim 224, wherein the organ is disposed in at least one of a portable container that is capable of maintaining the organ at a temperature of at most 15°C and a disposable cassette during perfusion of the organ.

262. (Previously Added) The method of claim 224, wherein the organ is disposed in at least one of a portable container that is capable of maintaining the organ at a temperature of at most 10°C and a disposable cassette during perfusion of the organ.

263. (Previously Added) The method of claim 224, further comprising placing the organ in a portable container that is capable of maintaining the organ at a temperature of at most 15°C to at least one of store and transport the organ.

264. (Previously Added) The method of claim 224, further comprising placing the organ in a portable container that is capable of maintaining the organ at a temperature of at most 10°C to at least one of store and transport the organ.

265. (Previously Added) The method of claim 224, comprising placing the organ in a portable perfusion unit to at least one of store and transport the organ.

266. (Previously Added) The method of claim 224, comprising placing the organ in a disposable cassette to at least one of store and transport the organ.

267. (Previously Added) The method of claim 265, further comprising monitoring the location of the organ using a global positioning system.

268. (Previously Added) A method of maintaining and/or restoring the viability of at least one organ subjected to a period of ischemia, comprising:

perfusing said at least one organ with a first medical fluid at a first temperature to at least one of maintain and restore pre-ischemia ATP and enzyme levels in the organ, wherein the first medical fluid contains oxygen in an amount effective to cause the organ's mitochondria to at least one of maintain and restore pre-ischemia ATP levels in the organ,

wherein the organ is perfused at the first temperature with the first medical fluid utilizing a pneumatically pressurized medical fluid reservoir controlled in response to a pressure sensor disposed in tubing inserted into the organ.

269. (Previously Added) The method of claim 268, further comprising utilizing a stepping motor-activated cam valve controlled in response to the pressure sensor disposed in tubing inserted into the organ.

270. (Previously Added) The method of claim 269, wherein a stepping motor-activated cam valve is provided for each organ.

271. (Previously Added) A method of maintaining and/or restoring the viability of at least one organ subjected to a period of ischemia, comprising:

perfusing said at least one organ with a first medical fluid at a first temperature to at least one of maintain and restore pre-ischemia ATP and enzyme levels in the organ, wherein the first medical fluid contains oxygen in an amount effective to cause the organ's mitochondria to at least one of maintain and restore pre-ischemia ATP levels in the organ,

perfusing the organ with a second medical fluid at a second temperature; and

utilizing a stepping motor-activated cam valve provided for each organ and controlled in response to the pressure sensor disposed in tubing inserted into each organ to at least one of reduce perfusion pressure and impose a pulse wave on the medical fluid.

272. (Previously Added) A method of perfusing an organ, comprising:

perfusing an organ utilizing at least one medical fluid reservoir, a fluid pathway connected to the reservoir and connectable to the organ, and a variable valve disposed in the fluid pathway, wherein the perfusion pressure is controlled at least in part by the variable valve.

273. (Previously Added) The method of claim 272, wherein the variable valve is selected from the group consisting of a stepping motor-activated cam valve, a rotary screw valve and a helical screw valve.

274. (Previously Added) The method of claim 272, wherein the variable valve is a stepping motor-activated cam valve.

275. (Previously Added) A method of transporting and storing an organ, comprising, in sequence:

a. perfusing said organ at a normothermic temperature to repair damage from warm ischemia;

b. perfusing said organ at a hypothermic temperature;

c. at least one of transporting and storing said organ at a hypothermic temperature; and

d. perfusing said organ at a normothermic temperature to repair damage from the hypothermic transport or storage of step c,

wherein said normothermic perfusing steps a and d are performed with an oxygenated perfusion fluid and said hypothermic perfusing step b is performed with a non-oxygenated perfusion fluid.

276. (Previously Added) The method of claim 275, wherein step c comprises transporting said organ, and said method further comprises:

e. perfusing said organ at a hypothermic temperature after step d.

277. (Previously Added) The method of claim 276, further comprising:

f. storing said organ at a hypothermic temperature after step e.

278. (Previously Added) The method of claim 276, further comprising transplanting said organ after step e.

279. (Previously Added) The method of claim 275, wherein step c comprises transporting said organ to a storage facility, and said method further comprises:

e. perfusing said organ at a hypothermic temperature and storing said organ at a hypothermic temperature at said storage facility after step d.

280. (Previously Added) The method of claim 279, further comprising:

f. perfusing said organ at a normothermic temperature to repair damage from the hypothermic storage of step e;

g. perfusing said organ at a hypothermic temperature; and

h. transporting said organ to a transplant facility at a hypothermic temperature.

281. (Previously Added) The method of claim 280, further comprising transplanting said organ after step h.

282. (Previously Added) The method of claim 280, further comprising:

f. perfusing said organ at a normothermic temperature to repair damage from the hypothermic transport of step h;

g. perfusing said organ at a hypothermic temperature; and

h. transplanting said organ.

283. (Previously Added) A method of transporting and storing an organ, comprising, in sequence:

a. perfusing said organ at a first temperature to repair damage from warm ischemia;

b. perfusing said organ at a second temperature, wherein said second temperature is less than said first temperature;

c. at least one of transporting and storing said organ at a third temperature, wherein said third temperature is greater than said second temperature; and

d. perfusing said organ at a fourth temperature to repair damage from the transport or storage of step c.

284. (Previously Added) The method of claim 283, wherein said perfusing steps a and d are performed at normothermic temperatures and steps b and c are performed at hypothermic temperatures.

285. (Previously Added) The method of claim 283, wherein said perfusing steps a and d are performed with an oxygenated perfusion fluid and said perfusing step b is performed with a non-oxygenated perfusion fluid.

286. (Previously Added) The method of claim 283, wherein step c comprises transporting said organ, and said method further comprises:

e. perfusing said organ at a hypothermic temperature after step d.

287. (Previously Added) The method of claim 286, further comprising:

f. storing said organ at a hypothermic temperature after step e.

288. (Previously Added) The method of claim 286, further comprising transplanting said organ after step e.

289. (Previously Added) The method of claim 283, wherein step c comprises transporting said organ to a storage facility, and said method further comprises:

e. perfusing said organ at a hypothermic temperature and storing said organ at a hypothermic temperature at said storage facility after step d.

290. (Previously Added) The method of claim 289, further comprising:

f. perfusing said organ at a normothermic temperature to repair damage from the hypothermic storage of step e;

g. perfusing said organ at a hypothermic temperature; and

h. transporting said organ to a transplant facility at a hypothermic temperature.

291. (Previously Added) The method of claim 290, further comprising transplanting said organ after step h.

292. (Previously Added) The method of claim 290, further comprising:

i. perfusing said organ at a normothermic temperature to repair damage from the hypothermic transport of step h;

j. perfusing said organ at a hypothermic temperature; and

k. transplanting said organ.